

Application No. 10/598,591  
Amendment dated March 30, 2009  
Reply to Office Action dated December 9, 2008

**Amendments to the Drawings:**

Five (5) Replacement Sheets of drawings are enclosed.

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#### REMARKS

Claims 1-6 and 37-40 are pending. Claims 37-40 have been added. Claims 7-36 have been canceled.

Applicants have canceled previously withdrawn Claims 7-36 in order to facilitate prosecution of the instant application, but reserve the right to pursue the subject matter of canceled Claims 7-36 in one or more divisional applications.

Applicants have amended the specification to correct several obvious errors, as will be readily apparent. No new matter has been added.

Responsive to the Examiner's objection regarding the drawings, Applicants submit herewith five (5) Replacement Sheets of drawings. These drawings correspond to those in PCT/EP04/10923, of which the instant application is the U.S. national stage, and include headings that have been translated into English from the original German in accordance with the translation of the present application that was previously filed. No new matter has been added.

Responsive to the Examiner's rejection of Claims 5 and 6 under 35 U.S.C. §112, second paragraph, Applicants have amended Claim 5 to recite only one particle size and have submitted new Claims 37-40 to separately recite the other particle sizes that had been previously recited in Claim 5.

The Examiner rejected Claims 1, 2 and 4-6 under 35 U.S.C. §103(a) as being obvious over JP 11060277 ("JP '277") in view of U.S. Patent Nos. 6,410,633 to Hikata et al. ("Hikata et al. '633").

The Examiner based the rejection on the English language abstract of JP '277, and appeared to use same as the base reference for disclosure of a glass material while citing Hikata et al. '633 for disclosure of a glass powder, and asserted that it would have been obvious at the time the present invention was made to make a glass powder from the composition of JP '277.

Referring to the English language abstract of JP '277 relied on by the Examiner, same discloses a crystalline glass substrate with a glass surface layer containing an antibacterial agent. Only the composition of the glass substrate is set forth in the English language abstract of JP '277 which, per page 5 of the Office Action, is relied on by the Examiner for the disclosure of the

base glass composition called for in independent Claim 1, and which includes, *inter alia*, 10-25 wt.% of  $\text{Al}_2\text{O}_3$  and 0-5 wt.% of  $\text{CaO}$ .

By contrast, independent Claim 1 calls for a glass powder including 0-7 wt.%  $\text{Al}_2\text{O}_3$  and therefore is not anticipated by, nor can be obvious in view of, JP '277.

Furthermore, independent Claim 1 additionally calls for 4-30 wt.% of  $\text{CaO}$ , while JP '277 discloses 0-5 wt.%  $\text{CaO}$ . These ranges are substantially divergent and indicate a further basis as to why the claimed glass composition would not be obvious in view of JP '277, particularly without further reasoning from the Examiner.

Therefore, even if it would have been obvious to modify the glass of JP '277 to form same as a powder, the powder would have a different composition than that claimed in independent Claim 1, and for this reason, independent Claim 1, and the claims depending therefrom, are not obvious in view of JP '277 in combination with Hikata et al. '633.

Further, independent Claim 1 would also not be obvious using Hikata et al. '633 as the base reference.

First, Hikata et al. '633 discloses a glass including 18-30 wt.%  $\text{B}_2\text{O}_3$ , preferably 20-25 wt.%  $\text{B}_2\text{O}_3$ , and teaches away from a  $\text{B}_2\text{O}_3$  content of less than 18 wt.%, stating that "[i]f the content is less than 18 wt.%, vitrification is difficult." (col. 2, lines 18-21). Independent Claim 1, by contrast, calls for a glass powder including 0-10 wt.%  $\text{B}_2\text{O}_3$ .

Furthermore, the Hikata et al. '633 glass includes 0-6 wt.%  $\text{Na}_2\text{O}$ , and Hikata et al. '633 teaches away from a greater amount of  $\text{Na}_2\text{O}$  at col. 2, lines 2-6, while independent Claim 1 calls for a glass powder including 5-30 wt.%  $\text{Na}_2\text{O}$ . Finally, the Hikata et al. '633 glass also calls for 8-20%  $\text{SiO}_2$ , preferably 10-15 wt.%, and teaches away from a  $\text{SiO}_2$  content of greater than 15 wt.% (col. 2, lines 33 and 34), while independent Claim 1 calls for a glass powder including 20-80 wt.%  $\text{SiO}_2$ .

The Examiner rejected Claims 1-6 under 35 U.S.C. §103(a) as being obvious over WO 03/018495 to Fechner et al. (which corresponds to U.S. Patent No. 7,192,602 to Fechner et al., hereinafter "Fechner et al. '602") in view of JP 10158037 ("JP '037"), Hikata et al. '633, and WO 2003/062163 to Beier et al. ("Beier et al. '163").

The Examiner's rejection of independent Claim 1 appears to be based on Fechner et al. '602 as the base reference modified by the teachings of JP '037 and Hikata et al. '633.

Independent Claim 1 calls for a water-insoluble silicate glass powder including glass particles of the recited base glass composition, and further including at least one of several recited antimicrobial components, with the antimicrobial components concentrated in the regions of the glass particles that are near the surfaces of the glass particles.

As discussed in detail throughout the present specification, the antimicrobial components are incorporated into the particles of the glass powder *after* the particles are produced, such as by grinding a body of the base glass formed from the melt, followed by incorporating the antimicrobial component(s) into the particles of the glass powder by ion exchange in salt baths, for example. In this manner, the *glass particles* of the claimed glass powder include one or more of the recited antimicrobial component(s) concentrated in regions of the glass particles that are near the surfaces of the glass particles, as claimed.

By contrast, the glass of Fechner et al. '602 is produced by a process in which the antimicrobial component, such as silver, is introduced into the glass during the melting process or through ion exchange of the glass after melting as discussed at col. 4, lines 1-3. This glass may be optionally milled into a glass powder as discussed at col. 4, lines 13-19.

In the working Example of Fechner et al. '602 beginning at col. 4, line 47, a glass composition including an antimicrobial component in the form of AgO is produced by melting the ingredients, including AgO, together, and then processing into a semi-finished product or ribbons, followed by milling to produce a powder. In this manner, because the antimicrobial component is incorporated into the glass in the melt or otherwise prior to grinding the glass into a powder, the resulting glass powders will not include individual particles having the antimicrobial component(s) concentrated in regions of the glass particles that are near the surfaces of the glass particles, as claimed.

Referring to the English language abstract of JP '037 relied on by the Examiner, same discloses a process by which a borosilicate or lead glass is produced, followed by incorporation of silver ions into the surface layer of the glass by ion exchange via dipping the glass in a fused

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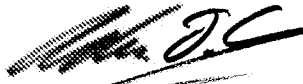
salt, *e.g.*, a silver salt, and heating to a temperature above the melting point of the salt and the glass transition temperature of the glass such that "a region containing silver ion with 0.01 to 50 mol.% silver ion density and 0.1 to 500 [micron] thickness from the glass surface is formed on the glass surface." The production of glass powder is not disclosed or suggested in the English language abstract of JP '037 relied on by the Examiner.

Therefore, independent Claim 1, as well as the claims that depend therefrom, cannot be obvious over Fechner et al. '602 or JP '037, either alone or in combination.

In the event Applicants have overlooked the need for an extension of time, payment of fee, or additional payment of fee, Applicants hereby petition therefore and authorize that any charges be made to Deposit Account No. 02-0385, Baker & Daniels LLP.

Should the Examiner have any questions regarding any of the above, the Examiner is respectfully requested to telephone the undersigned at 260-460-1741.

Respectfully submitted,



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